

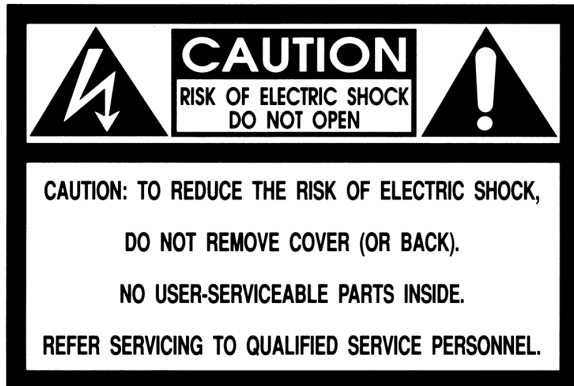
382isw Sonic Maximizer

User Guide and Reference Manual



BBE[®]
Sound Inc.

Important Safeguards



WARNING

To prevent fire or shock hazard, do not expose the unit to rain or moisture.

ATTENTION: RISQUE DE CHOC ELECTRIC- NE PAS OUVRIIR.



The lightning flash with arrowhead symbol, within an equilateral triangle, is intended to alert the user to the presence of uninsulated "dangerous voltage" within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.



The exclamation point, within a equilateral triangle is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.

For your protection, please read these safety instructions completely before operating the appliance, and keep this manual for future reference.

Carefully observe all warnings, precautions and instructions on the appliance and described in the operating instructions supplied with the appliance.

INSTALLATION

Water and Moisture - Do not install the appliance near water: for example, near a bathtub, washbowl, kitchen sink, laundry tub, in a wet basement, or near a swimming pool.

Heat - Do not install the appliance near sources of heat such as radiators, heat registers, stoves, or other appliances that produce heat.

Ventilation - Situate the product so its location or position does not interfere with its proper ventilation. For example, you should not place the product on a bed, sofa, rug, or similar surface that might block the vent openings, or placed in a built-in installation, such as a bookcase or cabinet that might impede the flow of air through the ventilation openings.

Wall or Ceiling Mounting - If your appliance can be mounted to a wall or ceiling, mount it only as recommended.

Accessories - Do not place this product on an unstable cart, stand, tripod, bracket, or table. The product may fall, causing serious injury to a child or adult, and serious damage to the product. Use only with a cart, stand, tripod, bracket, or table recommended by the manufacturer, or sold with the product. Any mounting of the product should follow the manufacturer's instructions, and should use a mounting accessory recommended by the manufacturer.

USE

Power Source - Connect the appliance to a power supply only of the type described in the operating instructions or as marked on the appliance.

Power-Cord Protection - Route the power cord so that it is not likely to be walked on or pinched by having objects placed on it, paying particular attention to the plugs, receptacles, and the point where the cord exits from the appliance.

Grounding or Polarization - Do not defeat the grounding or polarization feature of the AC power cord. If your AC receptacle will not accept the power cord plug, contact your electrician to install a proper AC receptacle.

When not in use - Unplug the power cord of the appliance from the outlet when left unused for a long period of time.

To disconnect the cord, pull it out by grasping the plug. Never pull the plug out by the cord.

AC Receptacle - Check to make sure that the AC receptacle holds the power cord plug firmly and securely. If the power cord plug is loose, contact your electrician to replace the defective and unsafe AC

Foreign Objects - Be careful that foreign objects and liquids do not enter the enclosure through openings.

Cleaning - unplug this product from the wall outlet before cleaning. Do not use liquid cleaners or aerosol cleaners. Use a damp cloth for cleaning.

SERVICE

Unplug the appliance from the wall outlet and consult qualified service personnel when:

- the power cord or the plug has been damaged.
- a solid object or liquid has fallen into the cabinet.
- the appliance has been exposed to rain or moisture.
- the appliance does not appear to operate normally or exhibits a marked change in performance.
- the appliance has been dropped, or the enclosure damaged.

Do not attempt to service the appliance beyond that described in the operating instructions. For all other servicing, refer to qualified service personnel only.

Thank you for your purchase of the 382isw, and for the trust that you've placed in BBE. We are committed to bringing you the finest products, with useful and unique features to serve your audio needs.

The BBE Sonic Maximizer is a two channel signal processor that will benefit any recording or sound reproduction system. Whether you purchased the Sonic Maximizer for your home studio, P.A., DJ system, or instrument rack, you will find the Sonic Maximizer's rugged construction and careful electronic design a welcome addition to your sonic arsenal.

The BBE Process — “What it Is”

Loudspeakers have difficulty working with the electronic signals supplied by an amplifier. These difficulties cause such major phase and amplitude distortion that the sound reproduced by a speaker differs significantly from the sound produced by the original source.

In the past, these problems proved unsolvable and were thus delegated to a position of secondary importance in audio system design. However, phase and amplitude integrity is essential to accurate sound reproduction. Research shows that the information which the listener translates into the recognizable characteristics of a live performance are intimately tied into complex time and amplitude relationships between the fundamental and harmonic components of a given musical note or sound. These relationships define a sound's “sound”.

When these complex relationships pass through a speaker, the proper order is lost. The higher frequencies are delayed. A lower frequency may reach the listener's ear first or perhaps simultaneously with that of a higher frequency. In some cases, the fundamental components may be so time-shifted that they reach the listener's ear ahead of some or all of the harmonic components.

This change in the phase and amplitude relationship on the harmonic and fundamental frequencies is technically called “envelope distortion.” The listener perceives this loss of sound integrity in the reproduced sound as “muddy” and “smeared.” In the extreme, it can become difficult to tell the difference between musical instruments, for example, an oboe and a clarinet.

BBE Sound, Inc. conducted extensive studies of numerous speaker systems over a ten year period. With this knowledge, it became possible to identify the characteristics of an ideal speaker and to distill the corrections necessary to return the fundamental and harmonic frequency structures to their correct order. While there are differences among various speaker designs in the magnitude of their correction, the overall pattern of correction needed is remarkably consistent.

PRODUCT DESCRIPTION

The BBE 382isw is a Sonic Maximizer and sub-woofer filter network combined into one unit. The single rack space device is for use in -10dBu unbalanced level applications. There are two separate channels that share the same front panel Lo Contour control and Process control for ganged-stereo operation. A single function button switches the BBE process on or off in both channels, which is useful for comparing the processed sound to the unprocessed sound. An LED next to the function button glows green when the BBE process is on and red when the process is off. The Lo Contour control is for adjusting the level of phase corrected low frequencies in the program material. The Process control is for adjusting the level of phase corrected high frequencies in the program material.

The SUB section consists of a FREQUENCY control and a LEVEL control. The phase corrected low frequency information from both channels is summed together and directed through an 18dB/octave filter

network. The SUB FREQUENCY control adjusts this filter and has a selectable range from 30Hz to 120Hz. By simply adjusting the Frequency control you can set the filter's frequency point of the Sub-woofer circuit. For example, if you set the Frequency control to 40Hz - then only the information below 40Hz will be sent to the Sub-woofer Output jack.

APPLICATIONS

Music and P.A. Systems

The BBE Sonic Maximizer is a welcome addition to any live sound P.A. system because the BBE circuit dramatically improves the clarity and intelligibility of vocals and musical instruments. Night club and mobile DJ systems will also benefit greatly from the BBE Process, with more depth, detail and punch over the entire mix. The BBE Sonic Maximizer can be hooked up to any P.A. or DJ sound system exactly like an equalizer would. When using in conjunction with an equalizer, the Sonic Maximizer should be added after the equalizer in the signal chain. In the event that the equalizer is being used for drastic tone alteration, then insert the Sonic Maximizer before the equalizer in the signal chain. Placement either before or after an equalizer should have no negative effect on the unit or its processing ability, however most users find they prefer more modest use of their equalizers once the BBE Sonic Maximizer has been added to their sound systems.

Instrument Racks

The BBE Sonic Maximizer will deliver surprisingly good results in guitar, bass and keyboard rack systems. Electric guitars have added "bite", "chunk" and improved definition. As Guitar Player magazine said, "BBE is the most cost effective improvement you can add to your rig". Acoustic guitars processed with the BBE Sonic Maximizer have a breathtakingly natural sparkle and presence. Bassists will delight in the BBE Sonic Maximizer's ability to bring much more punch to the bottom end without muddying up the midrange. The BBE Sonic Maximizer is also great for keyboard rigs, with everything from the latest samples to a vintage Rhodes benefiting equally from the patented BBE process.

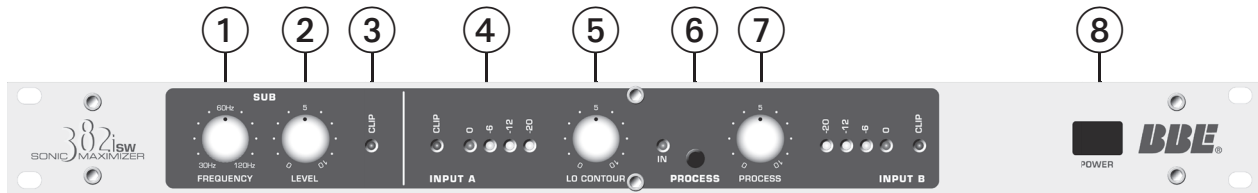
SET-UP

The BBE Sonic Maximizer is connected into the chain in series with the signal path the same way a graphic equalizer or limiter would be connected. The output of a mixer, pre-amp, or other sound source feeds the input of the Sonic Maximizer. Setting up the Sonic Maximizer as an echo send device like a digital reverb is not recommended as the processed effect is not fully realized when summed with the original source audio. In order to reduce the risk of damage to any equipment, properly connect all cables and power cables before turning on any components in the system.

Things to Remember

The BBE 382isw is designed to work with -10dBu line levels. This is suitable for professional and semi-pro mixers, P.A. consoles, recording studios, or D.J. equipment. The BBE 382isw drives load impedances down to 1K Ohm and supplies a maximum output level of +20dBu. Plugging a guitar or other high impedance device directly into the BBE 382isw will not work properly as its input impedance is less than 50K ohms.

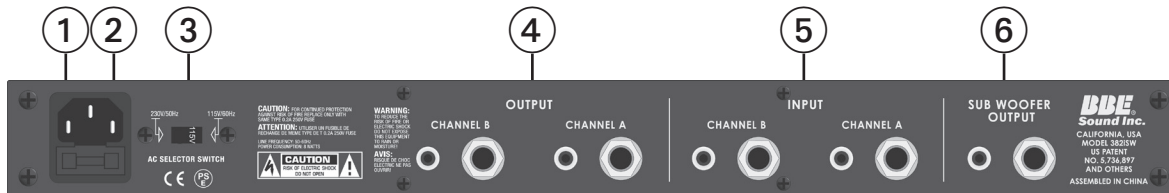
Front Panel Controls



1. SUB FREQUENCY: The phase corrected low frequency information from both channels is summed together and directed through an 18dB/octave filter network. The SUB FREQUENCY control adjusts this filter and has a selectable range from 30Hz to 120Hz. By simply adjusting the Frequency control you can set the filter's frequency point of the Sub-woofer circuit. For example, if you set the Frequency control to 40Hz - then only the information below 40Hz will be sent to the Sub-woofer Output jack.
2. SUB LEVEL: This control adjusts the output level of the sub-woofer circuit. The level is adjustable from fully off to a gain of 6dB.
3. CLIP LED: Indicates when the output is 3dB below true clipping.
4. LED DISPLAY: The LED display is used to indicate the output signal level of the BBE 382isw. Each number on the front panel corresponds to the output signal level, measured in decibels. Example: The "0" indicates a 0dBu signal level, "-6" refers to -6dBu, and so on. Once an input signal level has been established, increasing the BBE PROCESS and LO CONTOUR will increase the output signal and cause more LEDs to illuminate. The Clip LED monitors the input signal level. The Clip LED will illuminate at +17dBu, giving a 3dBu warning of the impending distortion at +20dBu, the actual clip point.
5. LO CONTOUR: Regulates the amount of phase corrected low frequencies.
6. PROCESS SWITCH: This push button switch allows for quick comparison of processed with unprocessed sound. When the switch is pushed in, the process is on and the indicator LED is green. When the switch is out, the process is off and the indicator LED is red.
7. PROCESS: Regulates the amount of phase corrected high frequencies.
8. POWER: This switch controls primary power to the BBE 382isw.

The BBE Sonic Maximizer is a line level signal processor and is to be connected prior to the power amp in any audio system. Significant damage may be inflicted to the bbe sonic maximizer or any subsequent component in the system in the event the output of a power amp is connected directly to the input of the BBE Sonic Maximizer.

Rear Panel Connections



1. AC POWER CORD INLET: Plugs into AC power receptacle. U.S. Model, 100-120Vac, 50/60Hz. All other models, 200~240Vac, 50/60Hz.
2. FUSE: Insert a flat blade screwdriver into the fuse holder located in the bottom portion of the AC Power Cord inlet. Carefully pry the fuse holder free from its compartment to access fuse. (Note: Replace with 250VAC, 200mA fastblow type fuse.)
3. AC SELECTOR SWITCH: This switch is set at the factory to match the AC power requirements of the country where it will be sold and should only be adjusted by a qualified technician.
4. OUTPUT: The output of the 382iSW can be taken from the 1/4" Phone Jack or the RCA Jack. Both are unbalanced and are the same point electronically. This allows both outputs to be used simultaneously, eliminating the need for a "Y" cord in the event multiple outputs are required. The recommended single load impedance is at least 10k Ohms. If both outputs are being used, a minimum of a 22k Ohm load per device is required. (The "load" is determined by the input impedance of the next subsequent component in the signal chain.) The maximum output is rated at +20dBu. The output impedance of the 382iSW is 1K ohms. NOTE: Actual output level will vary due to the selected position of the Process, and the actual input signal level.
5. INPUT: The input of the BBE 382iSW is an unbalanced connection. Although it can be either a 1/4" Phone Plug or an RCA Plug, it is recommended that only one input source is used. Both jacks are the same point electronically, however, due to the input/output impedance characteristics of most audio devices, a loss of signal may occur and/or damage to a component if both inputs are utilized. The input impedance of the 382iSW is 47k Ohms. The maximum signal level is +16dBu.
6. SUB WOOFER OUTPUT: The unbalanced low impedance line level output of the BBE 382iSW can be taken from the 1/4" Phone Jack or the RCA Jack.

WARNING! To prevent possible speaker or amplifier damage, always power-up peripheral devices first, wait 10 seconds, and then turn on the power amplifier. Turn off power amplifier first, then power-down peripheral devices.

SPECIFICATIONS

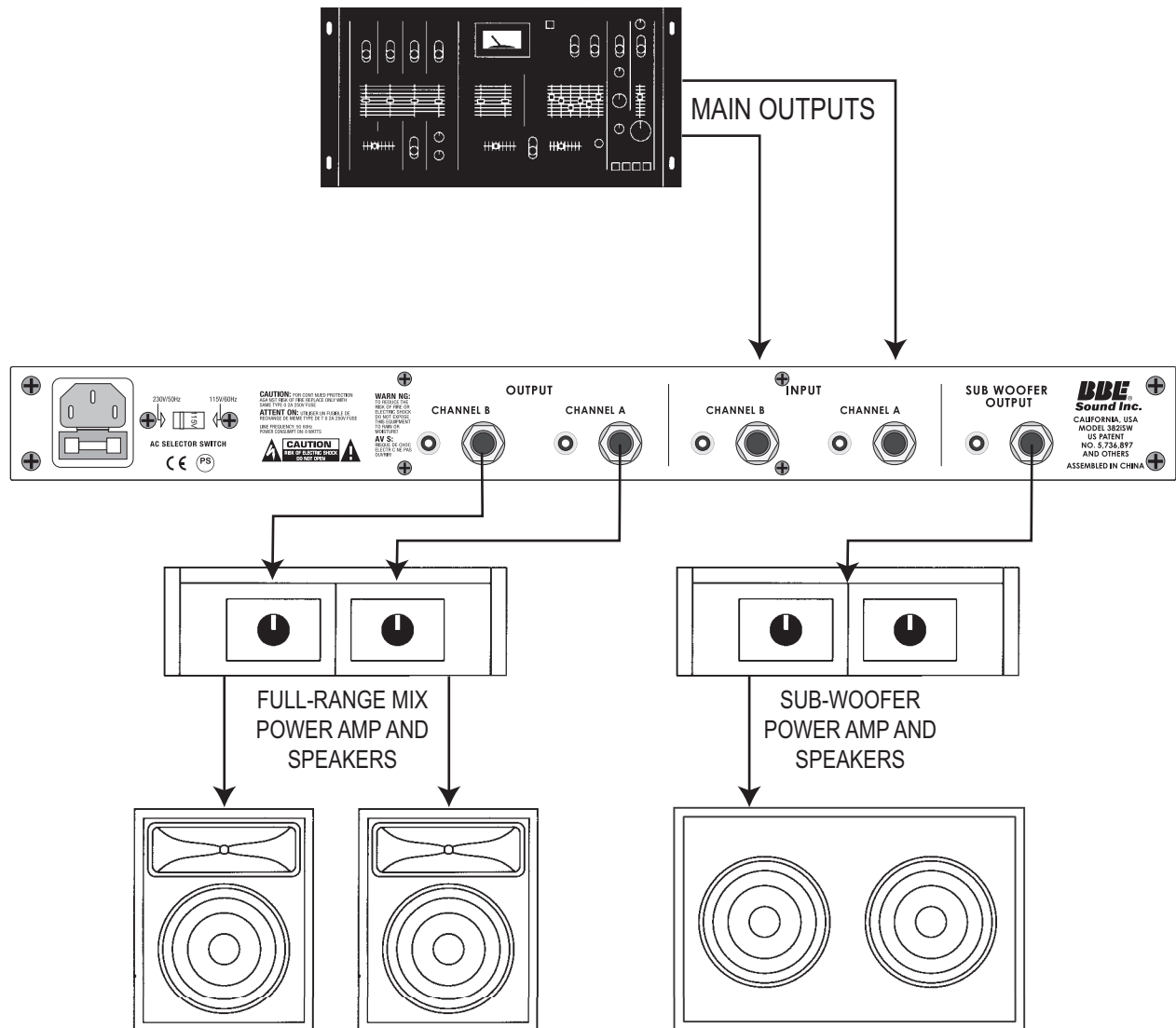
Frequency Response	process mode	Program controlled
	bypass mode	5Hz to 30kHz +/-0.5dBu, -10dBu input
THD in process mode		less than 0.1% at -10dBu input, 20-20kHz
Maximum Output		+20dBu (may vary due to control settings)
Input Impedance		50k Ohms, unbalanced 1/4" phone jack or RCA jack
Output Impedance		1k Ohms, unbalanced 1/4" phone jack or RCA jack
Sensitivity		-45dBu for maximum process
Maximum Process		+12dBu boost at 5kHz, -10dBu input
Lo Contour		+12dBu boost at 50Hz, -10dBu input
Sub Out		0-6dB of gain, 18dB/octave filter, selectable range from 30Hz to 120Hz, 1k Ohms, unbalanced 1/4" phone jack or RCA jack
Power Requirements		U.S., Canada & Japan models: 120VAC, 50/60Hz, 8 WATTS
		Standard model: 220VAC, 50/60Hz, 8 WATTS
Fuse		Replace with 250VAC, 200mA fastblow type fuse
Dimensions		19"(W) x 5.5"(D) x 1.7"(H)
Shipping Weight		6.5 lbs.

* 0dBu = 0.775mVrms

Note: Due to continuing product improvement, specifications and design are subject to change without notice.

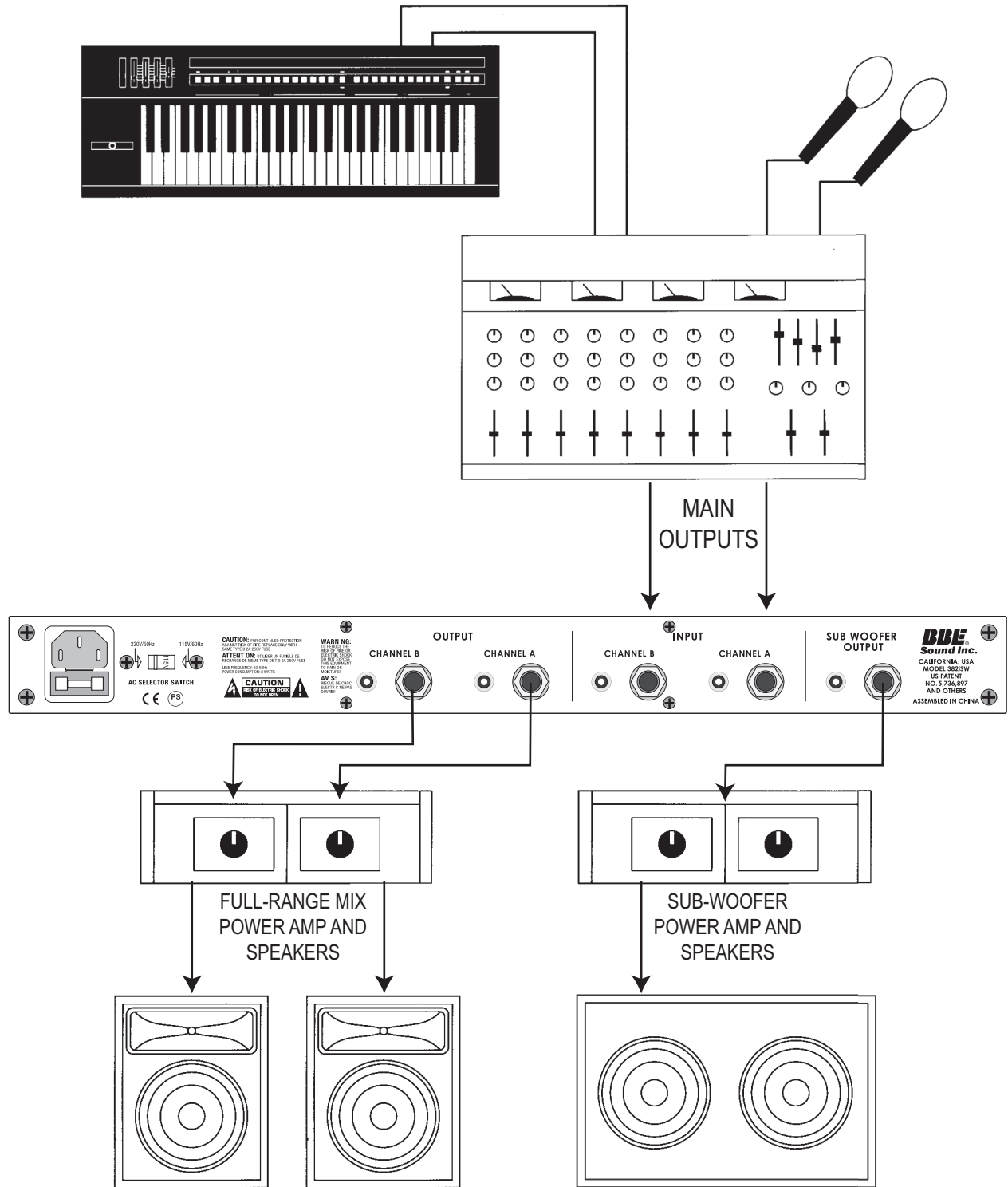
DJ APPLICATION

The BBE 382isw with its ganged-stereo controls and sub-woofer filter is the perfect complement to any permanently installed or mobile DJ system.



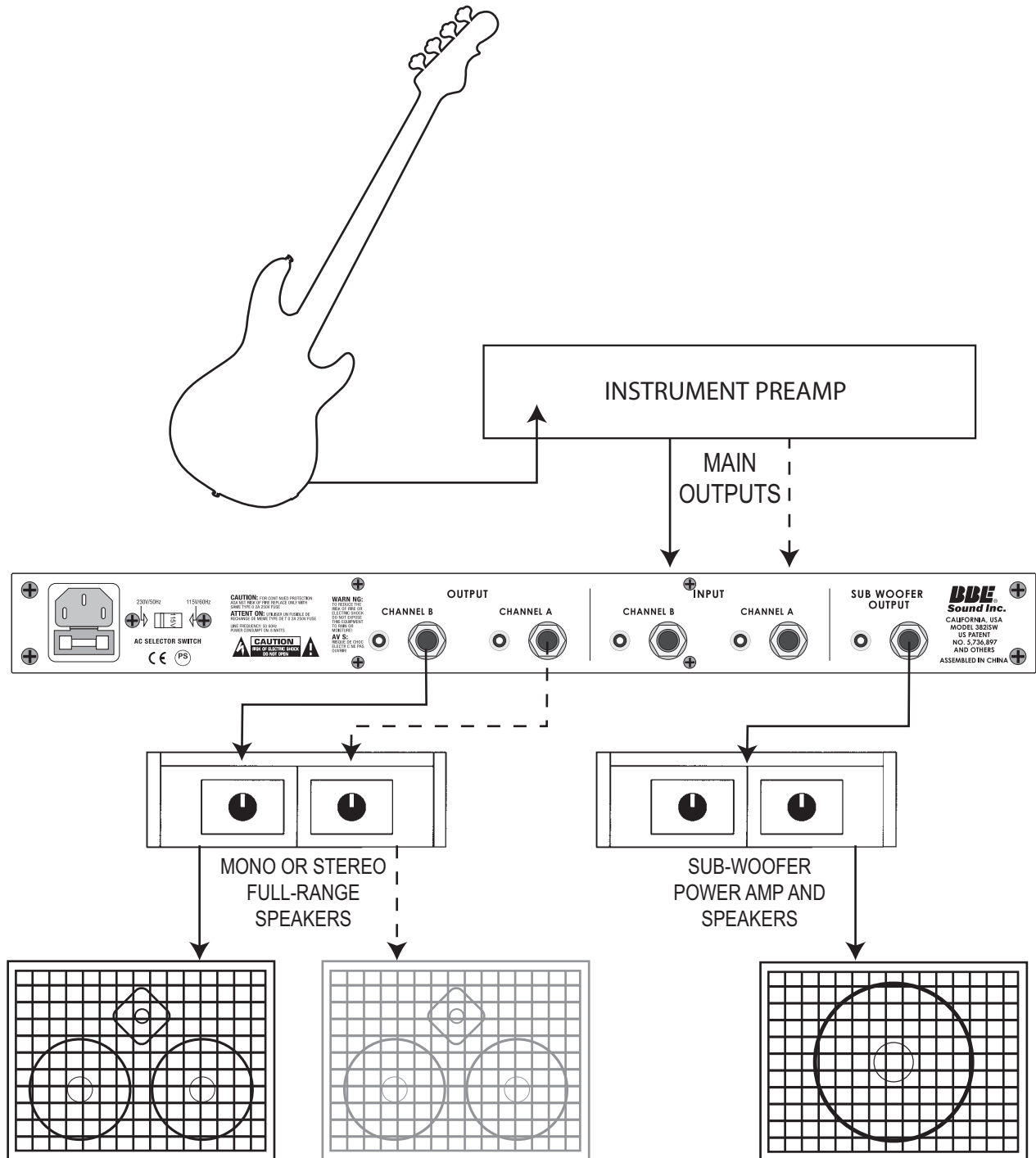
LIVE APPLICATION: NON-POWERED MIXER

Connect the BBE 382isw to the output of the mixing console or external equalization, if used. The output of the BBE will drive either a crossover or a power amplifier directly.



LIVE APPLICATION: INDIVIDUAL INSTRUMENTS

The BBE 382iSW can be used in bass, keyboard and other instrument rigs where a sub-woofer is required to reproduce the full frequency range of the instrument. Use the appropriate hookups to use the 382iSW in either stereo or mono configurations.



Service

We recommend that if at all possible, a BBE Sonic Maximizer which requires service be sent to our facility in Huntington Beach, California. We request that a "RETURN AUTHORIZATION" be issued by the dealer from whom you purchased the unit. If this is not possible, call BBE Sound, Inc. directly at (714) 897-6766, extension 116 to obtain a "RETURN AUTHORIZATION". Include a copy of the bill of sale with the unit when it is shipped to BBE Sound, Inc. so that the service can be expedited.

As the repair turnaround time is minimal, we request that the unit be sent to BBE Sound, Inc. We also need to add reliability data to our files so that future revision may be undertaken, if necessary, to improve the product. If unit has been purchased outside the US, please contact your national distributor.

Warranty

Warranty registration of the unit to BBE Sound, Inc. is not necessary. It is strongly recommended that you retain a copy of the bill of sale for future reference.

IT IS THE SOLE RESPONSIBILITY OF THE END USER TO PROVIDE THE BILL OF SALE OR OTHER MEANS OF PROOF OF PURCHASE TO VALIDATE THE WARRANTY IF WARRANTY SERVICE IS REQUESTED.

The BBE Sonic Maximizer is warranted against defects in material and workmanship for a period of five (5) years from date of purchase from BBE Sound Inc. or from an authorized dealer. During this period, we will repair units free of charge providing that they are shipped prepaid to BBE Sound, Inc., 5381 Production Drive, Huntington Beach, CA 92649. We will pay return UPS shipping charges within the USA. All charges related to non-UPS shipping, including customs clearance, will be billed. The warranty will be honored for the longer of either 90 days from the date of any service or the remainder of the original 5 Year factory warranty.

This warranty will be consider null and void by BBE Sound, Inc. if any of the following is found:

1. The equipment has been physically damaged.
2. The equipment shows signs of abuse.
3. The equipment has been electrically damaged by improper connection or attempted repair by the customer or a third party.
4. The equipment has been modified without authorization.
5. The bill of sales indicates that the purchase date of the equipment is not within the warranty period.

All non-warranty repairs are warranted for a period of 90 days from the date of service.

BBE Sound, Inc. is NOT LIABLE FOR CONSEQUENTIAL DAMAGES. Should the unit fail to operate for any reason, our sole obligation is to repair it as described above. DO NOT RETURN ANY PRODUCT TO THE ABOVE ADDRESS WITHOUT INSTRUCTIONS AND AUTHORIZATION ISSUED BY THE ABOVE LOCATION.

Maintenance

Maintenance of the BBE Sonic Maximizer is limited to proper cleaning of the unit with mild household cleaner such as Formula 409™ or Windex™. The chassis and cover are steel finished with a durable polyurethane paint, while the front panel is an anodized aluminum extrusion.

There are no user replaceable parts and the unit should not be opened for any reason unless you are a qualified technician. Calibration should be performed if parts are replaced or if a performance check-out indicates a problem with calibration. Long term use has shown that over the life of this unit there is little or no drift of the components in the BBE Sonic Maximizer which would cause a change in calibration. A very conservative design philosophy has resulted in a piece of equipment which runs very cool and should give years of trouble-free service.



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covered by U.S. Patent 5,736,897 and other U.S. and foreign patents pending.

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